Patent claims

1.   Method for three-dimensional detection of objects (3), in which
- a color pattern (5) with known projection data is projected onto
  the object to be detected (3),
5 - the color pattern (5) projected onto the object (3) is recorded
  with a camera (6), and
- the image (7) recorded by the camera (6) is processed in an
  analysis unit (9) into three-dimensional object coordinates of the
  object (3),
10   characterized in that,
  the projection data in the color pattern (5) is encoded with the
  aid of a redundant code.

2.   Method in accordance with Claim 1,
in which color values in the color pattern (5) are structured with
15 the aid of codewords of a redundant code and in which the projection
data of a point (P) of the image (7) are identified with the aid of
a search performed by the analysis unit (9) for the codewords
encoding the color values.

3.   Method in accordance with Claim 1 or 2,
20 in which color changes of the color pattern (5) are structured with
the aid of codewords of a redundant code and in which, during
analysis in the analysis unit (9), the codewords are allowed
corresponding color changes as valid color changes.

4.   Method in accordance with Claim 2 or 3,
25 in which codewords with a non-trivial Hamming distance are used.

5.   Method in accordance with one of the Claims 2 to 4,
in which the codewords are arranged so that they overlap.

6.   Method in accordance with one of the Claims 1 to 5,
in which the color values are varied in each color channel between
two values.

7.   Method in accordance with Claim 6,
in which the color values are varied in each color channel between a
minimum value and a maximum value.

8.   Method in accordance with one of the Claims 1 to 7,
in which the color values are changed in at least two channels
together and in which color changes occurring in at least two color
channels are allowed as valid color changes during analysis in the
analysis unit (9).

9.   Method in accordance with one of the Claims 1 to 8,
in which, in each color channel within each codeword at least one
color change is performed.

10.   Method in accordance with one of the Claims 1 to 9,
in which in the analysis unit (9) the position of color changes in
each color channel is determined with the aid of extreme values of a
first derivation (12) of a measurement signal (11).

11.   Method in accordance with one of the Claims 1 to 10,
in which the color pattern (5) is formed as stripes and in which,
during analysis in the analysis unit (9), color changes
corresponding to each other are combined into profile lines (15).

12.   Method in accordance with one of the Claims 1 to 11,
in which an individual recording of the image (7) for determining
the three-dimensional coordinates of the surface (2) of the object
(3) is performed.

13.   Method in accordance with one of the Claims 1 to 12,
in which, by evaluating the color of the color pattern (5) recorded
in the image (7)

and the color originally projected in the color pattern (5) a
coloring of the surface (2) of the object (3) is reconstructed.

14.   Device for three-dimensional detection of objects with a
projector (4) to project a color pattern (5) onto a surface (2) of
an object to be recorded (3) and with a camera (6) to record an
image (7) of the color pattern (5) projected onto the surface (2),
as well as with an analysis unit (9) for analyzing the image (7),
characterized in that the color pattern (5) that can be projected
by the projector (4) and the analysis unit (9) are set up to execute
the method in accordance with one of the Claims 1 to 13.

15.   Use of the method in accordance with one of the Claims 1 to 13
or of the device in accordance with Claim 14 for recognizing the
faces of people.

16.   Use of the method in accordance with one of the Claims 1 to 13
or the device in accordance with Claim 14 for recognizing the
gestures of people.